Sebastian **Uhlemann**

Research Scientist · Ph.D.

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Summary

Research scientist at the Lawrence Berkeley National Laboratory. His research focuses on the development and application of geophysical techniques (geoelectrical and seismic) to understand subsurface processes that impact upon groundwater dynamics, natural hazards, and interactions with plants and the atmosphere at a range of scales. This includes:

- Development of novel sensing and monitoring approaches applied to natural hazards, groundwater recharge, environmental pollution, and sustainable management of energy resources,
- Integrated monitoring and modelling of geophysical, hydrological, and geomechanical properties and processes
- Machine learning for automated processing of multi-modal data streams.

Education

Ph.D. in Applied Geophysics — *Zurich, Switzerland*

ETH Zurich — *Sep. 2013 - Apr. 2018*

- Thesis title: Geoelectrical monitoring of moisture driven processes in natural and engineered slopes

  Advisors: Prof. Dr. Hansruedi Maurer, Prof. Dr. Jonathan Chambers
- Awarded with an ETH Silver Medal for an outstanding Ph.D. thesis

M.Sc. in Applied Geophysics — *Delft, The Netherlands / Zurich, Switzerland / Aachen, Germany*

TU Delft, ETH Zurich, RWTH Aachen — *Aug. 2010 - Aug. 2012*

- Thesis title: On the Suitability of Capacitive Resistivity Imaging (CRI) for Permafrost Monitoring

  Advisors: Prof. Dr. Alan G. Green, Dr. Oliver Kuras
- Graduated with distinction (cum laude)

B.Sc. in Geoinformation Sciences and Geophysics — *Freiberg, Germany*

Freiberg University of Mining and Technology — *Oct. 2007 - Aug. 2010*

- Thesis title: Einfluss einer CO_2-Phase auf die elektrische Leitfähigkeit salinarer Porenwässer (Impact of CO_2 on the electrical conductivity of brines)

  Advisors: Prof. Dr. Klaus Spitzer, Dr. Jana Börner

Experience

Lawrence Berkeley National Laboratory — *Berkeley, CA, USA*

Research Scientist — *Sep. 2020 - Present*

AMRITA Center for Wireless Networks and Applications — *Amritapuri, India*

Visiting Professor — *Jan. 2020 - Present*

Lawrence Berkeley National Laboratory — *Berkeley, CA, USA*

Postdoctoral Scholar — *Jun. 2018 - Sep. 2020*

British Geological Survey — *Nottingham, UK*

Research Scientist — *Sep. 2012 - May 2018*

Dresdner Grundwasserforschungszentrum e.V. — *Dresden, Germany*

Research Assistant — *Dec. 2009 - Apr. 2010*

Awards

Awards

2019	**ETH Silver Medal**, in recognition of an outstanding doctoral thesis	*Zurich, Switzerland*
2015	**Best Paper Award**, 21st European Meeting of Environmental and Engineering Geophysics	*Turin, Italy*
2015	**Best Early Stage Researcher Poster**, EU-COST TU2012 annual workshop	*Porto, Portugal*
2015	**Best Paper Award**, 20th European Meeting of Environmental and Engineering Geophysics	*Athens, Greece*

Professional Activities & Associations

2019 - present **Associate editor**, Near Surface Geophysics, Journal of Applied Geophysics

2018 - 2020 **Special issue editor**, Near surface geophysics for geohazard assessment in *Near Surface Geophysics*; Mining and Mineral Exploration Geophysics in *Minerals*

2018 - present **Member**, Hydrogeophysics Technical Committee, Near Surface Geophysics Executive Committee. American Geophysical Union (AGU)

2018 - present **Volunteer for Groundwater Relief**, UK Charity providing hydrogeological and groundwater expertise to support humanitarian efforts to eradicate water poverty

Member, American Geophysical Union (AGU), European Association of Geoscientists and Engineers (EAGE), European Geosciences Union (EGU), Bay Area Geophysical Society (BAGS)

Reviewer, Water Resources Research; Science of the Total Environment; Geophysical Journal International; Scientific Reports; Geomorphology; Journal of Hydrology; Engineering Geology; and other journals

Selected Bibliography

Journal papers: 56 **h-Index: 22** **Citations: 1056** Source: Web of Science

First Author Peer-reviewed Journal Publications

[1] **S. Uhlemann**, B. Dafflon, H. M. Wainwright, K. H. Williams, B. J. Minsley, K. D. Zamudio, B. Carr, N. Falco, C. Ulrich, and S. S. Hubbard. "Surface parameters and bedrock properties co-vary across a mountainous watershed: Insights from Machine Learning and Geophysics". In: *Science Advances* (2022). DOI: 10.1126/sciadv.abj2479.

[2] **S. Uhlemann**, C. Ulrich, M. Newcomer, P. Fiske, J. Kim, and J. Pope. "3D Hydrogeophysical Characterization of Managed Aquifer Recharge Basins". In: *Frontiers in Earth Sciences* (2022). DOI: 10.3389/feart.2022.942737.

[3] **S. Uhlemann**, B. Dafflon, J. Peterson, C. Ulrich, I. Shirley, S. Michail, and S. S. Hubbard. "Geophysical Monitoring Shows that Spatial Heterogeneity in Thermohydrological Dynamics Reshapes a Transitional Permafrost System". In: *Geophysical Research Letters* (2021). DOI: 10.1029/2020GL091149.

[4] **S. Uhlemann**, J. Chambers, P. Meldrum, P. McClure, and B. Dafflon. "Geophysical Monitoring of Landslides–A Step Closer Towards Predictive Understanding?" In: *Understanding and Reducing Landslide Disaster Risk*. Ed. by Z. Arbanas. Kyoto, Japan: World Landslide Forum, 2021. Chap. Volume 3: pp. 85–91. DOI: 10.1007/978-3-030-60311-3_8.

[5] **S. Uhlemann**, P. B. Wilkinson, H. Maurer, F. M. Wagner, T. C. Johnson, and J. E. Chambers. "Optimized survey design for electrical resistivity tomography: combined optimization of measurement configuration and electrode placement". In: *Geophysical Journal International* 214 (2018), pp. 108–121. DOI: 10.1093/gji/ggy128.

[6] **S. Uhlemann**, J. Chambers, P. Wilkinson, H. Maurer, A. Merritt, P. Meldrum, O. Kuras, D. Gunn, A. Smith, and T. Dijkstra. "Four-dimensional imaging of moisture dynamics during landslide reactivation". In: *Journal of Geophysical Research: Earth Surface* 122 (2017), pp. 398–418. DOI: 10.1002/2016JF003983.

[7] **S. Uhlemann**, O. Kuras, L. A. Richards, E. Naden, and D. A. Polya. "Electrical Resistivity Tomography determines the spatial distribution of clay layer thickness and aquifer vulnerability, Kandal Province, Cambodia". In: *Journal of Asian Earth Sciences* (2017). DOI: 10.1016/j.jseaes.2017.07.043.

[8] **S. Uhlemann**, S. Hagedorn, B. Dashwood, H. Maurer, D. Gunn, T. Dijkstra, and J. Chambers. "Landslide characterization using P- and S-wave seismic refraction tomography – The importance of elastic moduli". In: *Journal of Applied Geophysics* 134 (2016), pp. 64–76. DOI: 10.1016/j.jappgeo.2016.08.014.

[9] **S. Uhlemann**, A. Smith, J. Chambers, N. Dixon, T. Dijkstra, E. Haslam, P. Meldrum, A. Merritt, D. Gunn, and J. Mackay. "Assessment of ground-based monitoring techniques applied to landslide investigations". In: *Geomorphology* 253 (2016), pp. 438–451. DOI: 10.1016/j.geomorph.2015.10.027.

[10] **S. Uhlemann**, J. P. R. Sorensen, A. R. House, P. B. Wilkinson, C. Roberts, D. C. Gooddy, A. M. Binley, and J. E. Chambers. "Integrated time-lapse geoelectrical imaging of wetland hydrological processes". In: *Water Resources Research* 52 (2016), pp. 1607–1625. DOI: 10.1002/2015WR017932.

[11] **S. Uhlemann**, P. B. Wilkinson, J. E. Chambers, H. Maurer, A. J. Merritt, D. A. Gunn, and P. I. Meldrum. "Interpolation of landslide movements to improve the accuracy of 4D geoelectrical monitoring". In: *Journal of Applied Geophysics* 121 (2015), pp. 93–105. DOI: 10.1016/j.jappgeo.2015.07.003.